

21 / Maternal Depression and Infant Maladjustment: A Failure of Mutual Regulation

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Unipolar maternal depression has been associated with impaired social, emotional, and cognitive development in children and adolescents (Downey & Coyne, 1990; Gelfand & Teti, 1990). More recently, a growing body of studies are demonstrating a similar association in infants and toddlers (Field, 1995; Rutter, 1990). If for the moment we suspend the complexity of thought that a phenomenon like depression demands and simply depict the depressed mother as sad, withdrawn, and uncommunicative, we might well ask how is it that these qualities compromise her child's development. Unfortunately, the answer to this question is not simple.

Figure 21.1 presents a scheme for understanding the many pathways that may lead to dysfunction or even psychopathology in young children of depressed mothers. Genetic factors may predispose or directly transmit problems to the child (Zuckerman & Beardslee, 1987). Physiological or temperamental characteristics evident at birth may lead to disorganized infant behavior that compromises mother-infant interactions (Hopkins, Campbell, & Marcus, 1987; Zuckerman, Bauchner, Parker, & Cabral, 1990). Maternal competence and availability may be affected by marital problems, lack of social support, and economic stress (Downey & Coyne, 1990; Frankel & Harmon, 1996; Teti, Gelfand, & Pompa, 1990). These processes are often interlocked. For example, maternal depression may affect newborn neurobehavioral functioning directly through prenatal physiological and hormonal changes associated with depression (Zuckerman et al., 1990).

Alternatively, infant difficulties could result indirectly from risk factors that are known to compromise infant development regardless of the mother's psychiatric status. These risk factors include smoking and drinking during pregnancy and lack of prenatal care, all of which have been reported to be associated with depression (Wolkind, 1981). Physiological changes and/or poor health habits during pregnancy may lead to difficult infant temperament, which in turn may increase the degree of stress experienced by the mother, lead to or exacerbate depressive symptoms, and compromise mother-infant interactions (Campos, Barrett, Lamb, Goldsmith, & Stenberg, 1983; Cutrona & Troutman, 1986; Field, 1987). If one then adds marital discord, lack of social support, and economic hardship, it is easy to see that double-jeopardy situations are created that affect both the mother's and the young child's functioning.

Although there are many pathways to child dysfunction, we believe that the final common pathway is the social-affective interchange that takes place between the child and the mother or other caregivers (Tronick, 1989; Tronick & Gianino, 1986a). Tronick (1986) has argued that social interchanges are mutually regulated. The child and the mother jointly regulate affective and behavioral states during social interactions in order to facilitate the child's goals of communicating and connecting with others and acting on the world (Sander, 1962; Trevarthen, 1979). The process of mutual regulation operates throughout development. Thus, although developmental issues change with the child's age, the basic process of mutual regulation remains the same. Our hypothesis is that disruptions of mutual regulation during social interactions account for many of the effects observed in young children of depressed mothers (Beeghly & Tronick, 1994; Tronick, 1989; Tronick & Gianino, 1986a).

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SECTION II / THEORETICAL AND CLINICAL PERSPECTIVES

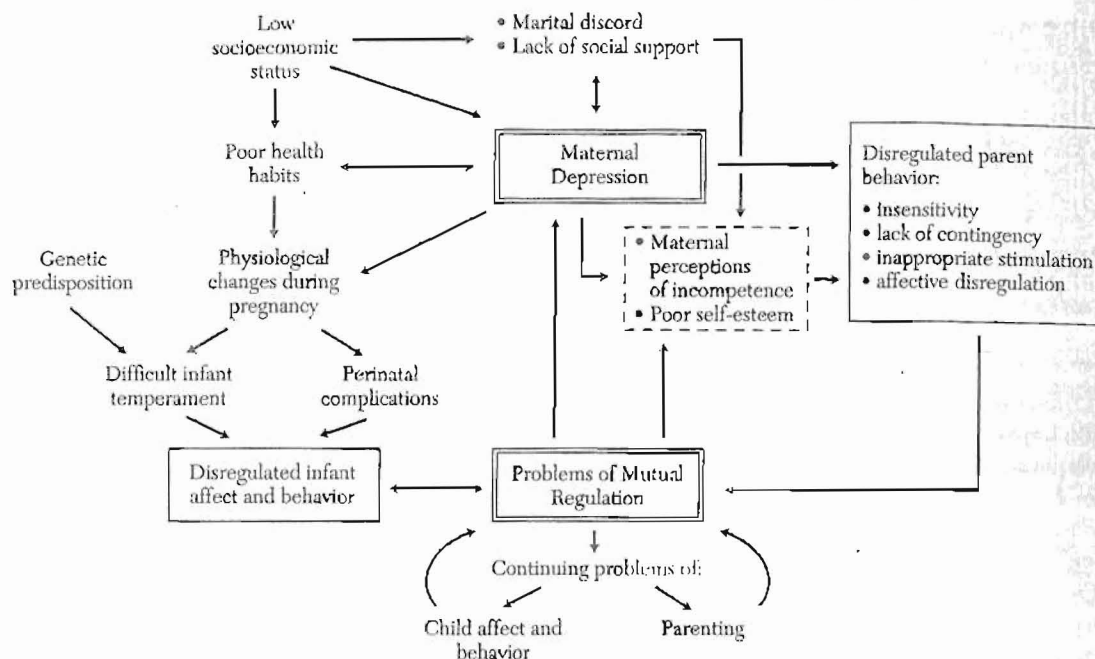


FIGURE 21.1

Pathways to infant dysfunction

The Normal Process of Mutual Regulation

What goes wrong in the mutual regulatory process of depressed mothers and their infants? The answer requires first knowing what goes right in the normal process of mutual regulation. Early models of mutual regulation argued that mother-infant interactions were characterized by large proportions of shared positive affect. Although infants experienced some negative affect, mothers rarely did, and negative affective states were not shared. Mothers, but not necessarily the infant, responded to their infant's signals in such a sensitive manner that both partners moved like dancers simultaneously changing interactive states, creating an interaction characterized by positive affect, reciprocity, synchrony, and attunement (Beebe et al., 1982; Brazelton, Koslowski, & Main, 1974; Stern, 1985). It was argued that good interactions had more of these qualities than poor interactions. Scales were developed that rated the interaction on a dimension of synchrony, attunement, or contingency. Underlying these scales was the widely accepted assumption that the more synchronous and contingent the interaction, the more positive

the affect, the better the interaction, and the more optimal the outcome of the child.

Subsequent research depicts a less idealized picture. Cohn and Tronick (1987) have shown that infants and mothers spend only about 30% of the time in synchronous or matching states. Modest proportions of negative affect expressed by the infant occasionally are shared by the mother. Changes in the affect and behaviors of the mother and infant are nonsimultaneous and bidirectional, with both partners responding to each other's communicative signals (Cohn & Tronick, 1988).

Recent research also demonstrates gender differences in infant affective and regulatory behavior as well as differences in interactive coherence. Weinberg, Tronick, Cohn, and Olson (1996) found that 6-month-old infant boys were more emotionally reactive than girls during face-to-face interactions with their mother. Boys displayed both more negative affective behaviors (e.g., crying, fussing, pick-me-up gestures, attempts to physically distance themselves from the mother, facial expressions of anger) and positive affective behaviors (e.g., facial expressions of joy, positive vocalizations). By contrast, girls were more likely than boys to focus on objects and to display facial expressions of interest. Weinberg (Weinberg et al., 1996) hypothesized that the boys' greater

emotional reactivity suggest that they have greater difficulty regulating affective states on their own and that they may need to rely more on maternal regulatory scaffolding than girls. Gender differences in interactive coherence also have been demonstrated with mother-son dyads, evidencing more coherence than mother-daughter dyads (Tronick & Cohn, 1989; Weinberg et al., 1996). In particular, mothers and sons had higher synchrony scores than mothers and daughters, suggesting that mother-son dyads more carefully tracked each others' behavior and facial expressions than mother-daughter dyads. This greater coordination, which takes place at a subtle microtemporal level, may function to help boys maintain self-regulation (Weinberg et al., 1996). By carefully monitoring and responding to their sons' communicative messages, mothers provide structure to the interaction. These gender differences reflect normal variants of interactive and regulatory style and may be critical to our understanding of the effects of maternal depression, particularly if boys, as we would suggest, are more dependent on regulatory input from the mother than girls.

Tronick and his colleagues (Tronick & Cohn, 1989; Tronick & Gianino, 1986a; Weinberg & Tronick, 1996) have characterized the typical mother-infant interaction as one that moves from coordinated to miscoordinated states and back again over a wide affective range. The miscoordinated state is referred to as a normal interactive error (or miscommunication) and the transition from a miscoordinated state to a coordinated state as a repair. Interactive errors occur for a number of reasons. Infants are often difficult and demanding social partners. Their capacities are immature and limited, and it is impossible for the mother, however well intentioned, to be alert and sensitive to infant cues at all times. Interactive errors in normal dyads, however, are quickly repaired. In studies of face-to-face interaction at 6 months of age, repairs occur at a rate of once every 3 to 5 seconds, and more than one-third of all repairs occur by the next step in the interaction (Tronick & Gianino, 1986b). Observations by Beebe and Jaffe (1992) and Isabella and Belsky (1991) demonstrating that maternal sensitivity in the midrange, rather than at the high or low end, is associated with security of attachment also can be seen as reflecting this mutually regulated reparatory process.

From a perspective of mutual regulation, both

the mother and infant bring their social capacities to the interaction, and both are responsible for the interaction's structure. Thus, reparation is fundamentally dyadic and the critical component of "good" interactions is both partners' ability to repair or negotiate interactive errors successfully. Regardless of age, developmental task, or stage, the child is motivated to maintain internal regulation in the service of communicating and connecting with others and acting on the world (Sander, 1962; Trevarthen, 1979). Successful achievement of these goals depends in part on the infants' ability to cope with and regulate physiological and affective disruptions and interactive errors on their own and to communicate their needs clearly to the caregiver by coordinating expressive modalities (i.e., face, voice, gaze, and gestures) into coherently organized communicative configurations (Weinberg & Tronick, 1994). Left to their own coping devices, however, infants would consistently fail and experience negative emotions and disregulation on a chronic basis. Fortunately, the infant's regulatory system is not "located" only in the infant. It has evolved as a dyadic system in which the other component is the mother (or other caregiver). The mother's behavior scaffolds the infant's regulatory capacities and is used by the infant in the service of his or her goals. The success or failure of the mother's regulatory input is dependent on her capacities to read her infant's communicative signals and to integrate this information with her knowledge of her infant. When the mother's scaffolding is effective, when reparation predominates, the infant experiences positive emotions and a sense of relatedness. When her regulatory input is ineffective, the infant experiences negative emotions and a sense of aloneness.

Normal infant functioning depends to a large extent on the successful resolution of interactive errors that typically occur in routine mother-infant interactions (Gianino & Tronick, 1988; Tronick & Cohn, 1989; Tronick & Gianino, 1986b). The experience of successfully coping and repairing interactive errors enhances the infant's development. The infant learns which communicative and coping strategies are effective and when to use them. This allows for the elaboration of communicative and coping skills, and the development of an understanding of interactive rules and conventions. With the accumulation of successful reparations and transformations of negative affect into positive affect, the infant estab-

lishes a positive affective core (Emde, 1983). The infant also learns that he or she has control over social interactions. Specifically, the infant develops a representation of him- or herself as effective, of his or her interactions as positive and repairable, and of the caregiver as reliable and trustworthy. These representations are crucial for the development of a sense of self that has coherence, continuity, and agency (Tronick, 1989).

It is our hypothesis that there is a failure in the process of mutual regulation between the depressed mother and her child. This regulatory failure can be caused by many different factors. Whatever the cause, the failure results in the infant experiencing negative emotions and a sense of disconnectedness with others on a chronic basis. In attempting to cope with this negative experience, the infant develops a negative affective core, primarily characterized by anger or sadness, a defensive coping style, and a distrust of the caregiver and of his or her own actions. These affective states and forms of dysfunction develop because of the ways infants experience and cope with failure, not because the infants are passively mirroring their mothers (Kohut, 1971, 1977). Thus, infants in unintended dyadic collusion with their mothers create in themselves affective states and forms of dysfunction that are similar to their mother's states and dysfunctions.

In this chapter we focus on the process of mutual regulation during social interchanges between mothers with unipolar depression and their infants. We review the literature on the quality of the caregiving of depressed mothers, the effects of maternal depression on the functioning and experiences of the infant, and the disrupted nature of the mutual regulatory process and how it may lead to developmental disturbances. Since our focus is on issues of regulation during the infant's first year of life, we direct the reader to several excellent reviews that examine the nature of maternal depression (Hopkins, Marcus, & Campbell, 1984; Zuckerman & Beardslee, 1987) and the effects of maternal depression on older children (Downey & Coyne, 1990; Gelfand & Teti, 1990; Rutter, 1990).

It should be noted that the term "depression" has been used to refer either to a continuum of depressive mood and psychological distress or to a discrete diagnostic entity. The prevalence of depressive disorder, based on diagnostic criteria and instruments such as the Research Diagnostic Cri-

teria (RDC) and the Schedule of Affective Disorders and Schizophrenia (SADS), has been estimated at approximately 10% (Campbell & Cohn, 1991; O'Hara, Zekoski, Phillips, & Wright, 1990). Interestingly, this rate has not been found to be higher for postpartum women as compared to nonpostpartum women (O'Hara et al., 1990). In comparison to diagnostic evaluations, the putative cut-offs for depression on self-report instruments such as the Beck Depression Inventory (BDI) or the Center for Epidemiologic Studies-Depression Scale (CES-D) may overidentify depression. Campbell and Cohn (1991) found that 58% of women with levels of depressive symptomatology above the cut-off did not meet RDC for depression. Furthermore, Campbell and her colleagues (Campbell, Cohn, Flanagan, Popper, & Meyers, 1992) found that at 6 months postpartum, 76% of mothers were no longer depressed on the basis of the RDC but that 44% continued to report subclinical symptoms of depression. As has been suggested by Lyons-Ruth (1995), this continuity of symptoms of dysphoria even in the absence of a diagnosis of depression may help explain findings indicating that mothers continue to show parenting difficulties even after the resolution of a depressive episode (Weissman & Paykel, 1974). Thus, different assessment tools make the interpretation of results difficult. In future studies it will be important to use both self-report measures and diagnostic instruments to facilitate the definition of samples and clarify the relation between different types of assessment. As Seifer (1995) points out, there is a need for researchers to use similar operational definitions in order for us to comprehend more fully the phenomenon of maternal depression.

Maternal Depression and Infant Maladjustment: A Failure of Mutual Regulation

It is clear from the literature that many aspects of parenting are affected by a mother's depression. On a simplest level, depression appears to have a dampening effect on maternal behavior and affect

(Downey & Coyne, 1990). More specifically, as will be elaborated later, depression affects the mother's ability to respond sensitively to her infant's needs, affective states, and goal-directed activities. The depressed mother is less likely to provide her child with appropriately modulated levels of stimulation and to express positive affect. She is more likely to express flat or negative affect and to disrupt her child's states and ongoing engagements with objects and people.

The evidence suggesting that depression has a dampening effect on maternal behavior has led a number of researchers to question depressed mothers' ability to tend adequately to their infants' basic physiological needs (Dodge, 1990; Fleming, Ruble, Flett, & Shaul, 1988; Livingood, Daen, & Smith, 1983). Dodge (1990) suggested that the mother's depression may be so time-consuming and absorbing that it interferes with feeding and other caregiving activities. However, studies have generally found that, although depressed mothers feel less efficacious in the maternal role than other mothers (Teti & Gelfand, 1991), they engage in functionally adequate caregiving (Cohn, Matias, Tronick, Connell, & Lyons-Ruth, 1986; Cohn & Tronick, 1989; Fleming et al., 1988; Livingood et al., 1983).

Few studies have evaluated the behavior and affect of depressed mothers with newborn infants. Social and affective problems associated with depression have been studied more extensively in mothers of older infants. Findings on depressed mothers taken as an homogeneous group (an approach that we consider inadequate because research indicates that depressed mothers form an heterogeneous group) demonstrate that depressed mothers have difficulties providing adequate levels of social stimulation to their infants. When asked to interact with their infants, depressed mothers typically are described as less involved than control mothers. They slouch back in their chair, turn away from the infants, and touch their infants less often than other mothers (Cohn et al., 1986; Field, 1984; Fleming et al., 1988). They engage in fewer activities, games, and imitative behaviors (Field, 1984; Field et al., 1985; Field, Healy, Goldstein, & Guthertz, 1990). Their speech is less focused on the infant and shows less acknowledgment of infant agency (Murray, Kempton, Woolgar, & Hooper, 1993). Furthermore, they vocalize less often, fail to modify their speech in response to infant vocalizations, and

take considerably longer to respond to vocalizations than nondepressed mothers (Bettes, 1988). Because infants are unable to detect a relation between their own and their mother's vocalizations if these delays are too long, Bettes suggests that depressed mothers fail to provide structure and predictability to their vocalizations.

Depressed mothers' affective tone and their capacity to regulate affect is compromised, as well. Depressed mothers are consistently described as sad, depressed, and anxious-looking during interactions with their young infants (Field et al., 1985; Sameroff, Seifer, & Zax, 1982). They show negative, flat, angry, and tense facial expressions (Field et al., 1985) both in the laboratory and during naturalistic observations (Cohn et al., 1986; Cohn, Campbell, Matias, & Hopkins, 1990; Cohn & Tronick, 1989). Cohn and his colleagues (Cohn et al., 1986; Cohn & Tronick, 1989) also have found that they are more likely to poke their infants in an intrusive and hostile fashion. Furthermore, the content and emotional tone of their speech is more negative than the speech of other mothers (Murray et al., 1993), and they are less likely to imbue their language with affective signals and the exaggerated and high-pitch intonations that typically characterize motherese (Bettes, 1988). Thus, in each communicative domain—voice, face, and touch—the quantity, quality, and timing of depressed mothers' affective behavior is distorted in ways that contrast sharply with the affective behaviors of control mothers.

Maternal depression has been associated with a number of infant problems. Although few studies have evaluated the functional status of newborn infants of depressed mothers, evidence suggests that these infants may be difficult interactive partners. Newborn infants of hospitalized or very high-risk depressed mothers evidence poor tonus, self-quieting ability, and responsivity to social stimulation on the Brazelton Neonatal Behavioral Assessment Scale (Field et al., 1985; 1988; Sameroff et al., 1982). Zuckerman et al. (1990) have further found that the newborn infants of depressed mothers cry excessively and are difficult to console. This research suggests that the newborn infants of depressed mothers are at risk for interactive and temperamental difficulties from birth even prior to interacting with their mother.

One interpretation of these findings is that these behavioral difficulties are related to the mother's depressed state through some unspeci-

fied genetic effect. There is little evidence, however, to support or refute this genetic hypothesis. Alternatively, we can hypothesize that changes in maternal hormonal functioning and disruptions associated with depression (e.g., sleeplessness, appetite loss) might change the physiologic milieu of the developing fetus and produce behavioral disorganization. This hypothesis suggests that there is a failure in maternal-fetal regulation that results in newborn dysregulation. This hypothesis, also, however, remains unevaluated in part because the current evidence often is confounded by the high-risk status of the mothers studied. Furthermore, although newborns of depressed mothers experience a higher incidence of perinatal complications (Hopkins, et al., 1987), at the present time there is no indication that newborn status is related specifically to maternal depression. A study during the perinatal period of maternal-fetal and maternal-newborn regulation in a low-risk sample is needed if we are to learn whether depression compromises newborn infants' functioning. These studies need to take into account whether mothers were prescribed psychotropic medication during the pregnancy. At this point, there is minimal research on the effects of in utero exposure to psychotropic drugs on newborn functioning.

Maternal regulatory failures are associated with a wide range of infant affective problems. It is now well documented that infants of depressed mothers show fewer affectively positive facial expressions and vocalizations, more fussiness, more withdrawal, less attentiveness to the mother, and lower activity levels than control infants (Cohn & Tronick, 1989; Cohn et al., 1986; Field, 1984; Field et al., 1985, 1988, 1990). While these studies were compromised because the samples were high risk, studies by, for example, Hoffman and Drotar (1991), Cohn and Campbell (Cohn et al., 1990), Murray (1992), and Teti and Gelfand (Teti, Gelfand, Messinger, & Isabella, 1995) have found effects of maternal depression on maternal and infant functioning using low-risk samples.

The infants of depressed mothers also show limited engagement with people and objects. Cohn and Tronick (Cohn & Tronick, 1989); Cohn et al., 1986; have found that 6-month-old infants of depressed mothers engage in positive social play less than 5% of the time and explore objects only 13% of the time. These percentages are significantly lower than those of control infants, who

play more than 15% of the time and explore objects 30% of the time. Furthermore, in contrast to control infants, the infants of depressed mothers spend a substantial amount of the time looking away and being upset. Similar results have been reported by Field in 3-month-old infants (Field et al., 1990). Thus, it appears that the infants of depressed mothers have difficulty maintaining engagement with both objects and people. One interpretation of these findings is that compromises in object and social engagement reflect permanent cognitive impairment. An alternative interpretation suggested by a model of mutual regulation is that these compromises reflect defensive coping strategies developed by the infant to control disruptive affective states experienced in interaction with the mother. These coping strategies curtail the infant's engagements with the world of people and objects and deprive the infant of experiences necessary for normal cognitive development. If the situation with the mother persists, cognitive development will be compromised. If the situation resolves, cognitive development may proceed normally. This interpretation emphasizes the interplay among affect, coping, and cognition. Whatever the reason may be, there is evidence that the older infants of depressed mothers show some cognitive impairment. Murray (Murray, 1992; Murray et al., 1993) has found that these infants perform less well on Piagetian object concept tasks at 9 and 18 months; Lyons-Ruth (Lyons-Ruth, Zoll, Connell, & Grunebaum, 1990; Lyons-Ruth, Zoll, Connell, & Grunebaum, 1986) has shown that they have poorer scores on the Bayley Mental Scale at 1 year than the infants of asymptomatic mothers.

Infant and maternal regulatory failures are evident in the dyadic qualities of the interaction. Field (1984) described the affect of depressed mothers as unchanging, implying that they were unresponsive to their infants. Cohn (Cohn et al., 1986) noted that depressed mothers and their infants were unlikely to share affective states. In a later study, however, Cohn (Cohn et al., 1990) found that the interactions of depressed mother-infant dyads were contingent but that the mothers and infants consistently responded to and reinforced each other's negative displays. Similarly, Field (Field et al., 1990) found that depressed mothers and their infants match each other's level of expression but that they spend more time to-

gether in negative states than nondepressed dyads. Thus, it appears that depressed mothers and their infants are stuck in affectively negative states. The effect is that their interactions are not mutually regulated and the infants are deprived of the experience of reparation of negative into positive affect. We would expect that eventually this situation would compromise the infant's sense of self-agency and that the mother and infant would fail to establish primary interconnectedness.

It is important to consider infant gender when evaluating the effects of maternal depression on maternal and infant functioning. Weinberg (1996) found that mothers with a history of depression were more affectively negative (e.g., angry) with their 3- and 6-month-old sons than with their daughters during face-to-face social interaction. At 6 months of age, the sons as compared to the daughters of these mothers appeared more vulnerable to their mothers' depressive status. Boys expressed less joy, gestured more, and were less likely to self-comfort (e.g., suck on a thumb) than girls. Weinberg (Weinberg et al., 1996) has argued that boys are more demanding social partners than girls, that they have a more difficult time regulating affective states, and that they may need their mothers' help to regulate affect. The mothers with a history of depression appeared to have difficulties giving their sons the regulatory scaffolding that they needed, making the regulatory task of the mother-son dyads more difficult. In this way, a cycle of mutual regulatory problems between mothers and sons may become established. Murray (Murray, 1992; Murray et al., 1993) also has found that the male infants of depressed mothers experience greater difficulties than the female infants of these mothers. She found that male infants of mothers with a postnatal depression were more likely than female infants of mothers with a postnatal depression to be insecurely attached to the mother (Murray, 1992) and to have lower Bayley scores at 18 months (Murray et al., 1993).

Young infants' behavior reflects their interactive history with the mother. Field (1984) found that infants of depressed mothers are less reactive to their mothers in Cohn and Tronick's (1983) simulated depression paradigm. She interpreted this to mean that the infants had developed an expectation that the mother would act "depressed" and so were less distressed by the simulation of

depression than control infants. The hypothesis that young infants establish particular interactive styles as a result of their interactive history with the mother is supported by Cohn's (Cohn et al., 1986) finding that infants of depressed mothers who are more negative during laboratory face-to-face interactions are also more negative during periods of naturalistic observation. It is further supported by a finding by Field (Field et al., 1988) that the negative interactions of the infants of depressed mothers generalize to their interactions with unfamiliar female adults. Pelaez-Nogueras, Field, Cigales, Gonzalez, and Clasky (1994), however, have found that infants' behavior is more positive when they interact with a familiar female nursery teacher than with their mother. Thus, the data suggest that negative interactions with the mother generalize to unfamiliar but not to familiar social partners.

Heterogeneity of Depression and the Process of Mutual Regulation

Most of the research evaluating the behavior and affect of depressed mothers has treated these women as if they form a homogeneous group. This research, however, needs to be qualified because data suggest that the behavior of depressed mothers is heterogeneous. Several researchers have found that the behavior and affect of some depressed mothers appear quite normal, whereas the behavior and affect of mothers with similar levels of depressive symptomatology are compromised (Cohn et al., 1986; Cohn & Tronick, 1989; Field et al., 1990; Lyons-Ruth et al., 1986; Radke-Yarrow, 1987). Cohn and Tronick (1989) have proposed a typology of 4 different styles of maternal affective and social behavior of mothers with high levels of depressive symptoms on the CES-D. They labeled one group of depressed mothers "intrusive." These mothers engaged in rough handling, spoke in an angry tone of voice, poked at their babies, and actively interfered with their infants' activities. A second group of depressed mothers, labeled "withdrawn," were disengaged, withdrawn, unresponsive, affectively flat, and un-

able to support their infants' activities. A third group of mothers, labeled "positive," evidenced a distribution of affective behavior that was similar to that of control mothers, although they looked away from their infants more than nondepressed mothers. Finally, a "mixed" group of depressed mothers displayed a mixed pattern of intrusiveness and withdrawal. Similar observations have been made by Field (Field et al., 1990) and by Radke-Yarrow (1987) in mothers of toddlers.

Cohn and Tronick (Cohn & Tronick, 1989; Cohn et al., 1986) found important correspondences between infant behavior and maternal interactive style. Infants of intrusive mothers spent almost 70% of their time looking away from the mother but only 9% of their time looking at objects. Infants of withdrawn mothers were significantly more likely to protest and to be distressed than the infants in the other groups, suggesting that maternal withdrawal may be particularly aversive to young infants. By contrast, depressed mothers whose behavior most closely resembled the behavior of asymptomatic mothers had infants whose behavior most closely approximated the behavior of control infants. The behavior of this group of depressed mothers, however, was not identical to the behavior of control mothers, and their infants' amount of play and object attend were still reduced compared to infants of asymptomatic mothers. Finally, the infants of the mixed group of depressed mothers evidenced an inconsistent pattern of responses. They protested and attended to objects less but looked at and played with the mother more than the infants of the withdrawn mothers. In comparison to the infants of the intrusive mothers, these infants protested at similar levels, looked away less, and attended to objects and the mother at slightly higher levels.

These differential infant reactions are expectable. From the perspective of mutual regulation, infants of withdrawn mothers fail to achieve their goal for social connectedness because of the mothers' lack of response and both partners' inability to repair the interaction. Initial failures result in the infants experiencing anger, repeatedly attempting to achieve their goals, and failing. Their goal for social engagement is not achieved, and their anger is not repaired into a more positive state. Since they are unable to cope successfully on their own with this affective state, the infants become disregulated, fuss, and cry. The

predominance of negative affect compels them to devote much time to controlling their affective state. Eventually, repeated failures to change their mother's behavior and their own affective state lead to a disengaged and self-directed style of coping characterized by self-comforting, self-regulation, passivity, and withdrawal. To the extent that this coping style is successful in controlling negative affect, it becomes deployed automatically and defensively in an effort to preclude anticipated negative affect even in situations in which negative affect may not occur. When failure repeats and accumulates, these infants develop a negative affective core characterized primarily by sadness. They develop a representation of the mother as untrustworthy and unresponsive and of themselves as ineffective and helpless (Gianino & Tronick, 1988).

The infants of hostile intrusive mothers face a different regulatory problem. Because the mothers are actively disruptive of the infants' activities, reparation of the interaction does not occur. Like the infants of withdrawn mothers, these infants initially experience anger, turn away from the mother, push her away, or screen her out. Unlike the failure experience of the infants of withdrawn mothers, occasionally these coping behaviors are successful in limiting the mother's intrusiveness, and the infants' anger is not transformed into an uncontrolled disregulated state. With the reiteration and accumulation of this experience of reparation, the infants develop an affective core characterized by anger. To the extent that their coping behaviors are effective in fending off the mother, the infants eventually internalize an angry and protective style of coping that is deployed defensively in anticipation of the mother's intrusiveness. The infants become easily angry when interacting with the mother and others and frustrated when acting on objects.

Prolonged experience with withdrawn mothers might be expected to produce infants who lose self-agency and feel fragmented and depersonalized. Affectivity might be compromised to a state of anhedonia given the infants' attempts to control negative affect (Stern, 1985). This would limit the quality of the infants' interactions with people and experiences with objects. By contrast, infants of intrusive mothers may have a more intact sense of agency since their efforts are sometimes successful in limiting the mother's intrusiveness. Their

sense of affectivity, however, is more likely to contain elements of rage directed at the other and at the self.

Both the intrusive and withdrawn mothers display relatively consistent interactive styles. This consistency allows for the development of stable although inappropriate infant coping strategies. Infants of mixed depressed mothers, however, are confronted with both prolonged periods of non-reparation and inconsistency in the mothers' behavior. This inconsistency may not permit these infants to develop a stable coping style and may lead to a more general form of disorganization.

Weinberg (1992) has argued that these observations need to take into account gender differences in infant regulatory and affective styles. She has hypothesized that if boys are more affectively reactive and less able to self-regulate on their own, they may be particularly susceptible to the withdrawn style of depression that denies them the regulatory dyadic support that they need. On the other hand, girls, who at 6 months of age are significantly more focused on objects than boys, may be more vulnerable to the intrusive style of depression that persistently interferes with their activities. Along with Weinberg's (1992) findings that girls show more stability of sadness than boys and boys show more stability of distancing and escape behaviors than girls, we would hypothesize that these gender differences may be the first signs presaging the differential proportion of older boys who experience behavioral problems and older girls who become withdrawn and depressed.

The research on maternal interactive styles and differential infant reactions emphasizes how critical it is to describe what the mother actually does with her infant. Knowing what a depressed mother does requires observing her interactions with her child in a number of contexts. However, to date most of the studies have taken place either in the laboratory using structured situations or in the home setting during naturalistic observations. In a unique study, Cohn and his colleagues (Cohn et al., 1986) observed mothers during structured face-to-face interactions and naturalistic observations in the home. They found a high degree of concordance between the two contexts. Nonetheless, the structured observation missed apparently important phenomena. For example, the mothers who were the most intrusive during the laboratory

observation tended to avoid their infants when they were at home. Given the choice to interact or not, these mothers limited contact with the infants to comforting or caregiving activities. Preliminary data from our current research indicate that depressed mothers' style of interaction with their 3-month-old infants at home is disengaged. Compared to controls, depressed mothers were more likely to prop up a bottle so that the infant could eat alone, engaged in less spontaneous face-to-face play with the infant, expressed less positive exaggerated affect to the infant, and spent more time doing adult-focused activities such as laundry out of proximity to the infant. These findings indicate that it is important to assess depressed mothers in a variety of situations.

The caregiving of mothers of older infants and toddlers can be characterized in a similar manner to that of mothers of younger infants (Downey & Coyne, 1990). In addition, Radke-Yarrow (1987) has described stylistic differences in their caregiving that correspond to the styles of mothers of younger infants. It is not surprising, given the regulatory failures of these mothers and infants, that the infants of depressed mothers are more likely to be insecurely attached to their mother. Several researchers have noted high proportion of insecure attachments (Lyons-Ruth et al., 1986; Lyons-Ruth et al., 1990; Murray, 1992; Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985; Teti et al., 1995). From the perspective of mutual regulation, the infants of intrusive mothers might be expected to become avoidant as they elaborate an angry defensive coping style designed to limit interaction with the mother whereas infants of withdrawn mothers might be expected to become ambivalent and anxiously attached. There is some support for this hypothesis. Several researchers have suggested that infants who evidence little avoidance or resistance in the Strange Situation are likely to have a responsive mother whereas infants who show avoidance or resistance are more likely to have a hostile/intrusive or unresponsive mother (Belsky, Rovine, & Taylor, 1984; Lyons-Ruth et al., 1986). Furthermore, the infants of mixed depressed mothers, who alternate between intrusiveness and withdrawal, might be expected to be disorganized in their attachment behavior. This outcome is likely because there is no clear direction of action that would help the infants cope with the stress that they experience while in-

teracting with their mother. Although a high proportion of disorganized behavior has been found among the infants of depressed mothers (Lyons-Ruth, 1992), further research is necessary to determine whether there is a relation between maternal social-affective style and infant attachment classification.

Around the end of the first year, infants also begin to develop an awareness of their own and their partners' intentional and affective states. Trevarthen (1979) refers to this awareness as *secondary intersubjectivity*; Stern (1985) calls it *attunement*. During this period, it is likely that the infant of a depressed mother becomes increasingly aware of the mother's affective states of sadness, anger, and hostility and of the infant's own feelings of sadness, helplessness, and anger. Awareness of these emotions may produce a great deal of anxiety in the infant, which may require an enormous effort to control. We would hypothesize that these infants become hypervigilant of their mother's affective state in order to defend themselves from the mother's affect and their own affective reactions. This defensive coping style might extend to any event that induces a highly aroused affective state, such as exciting interactions with people or intense interest in objects. Highly arousing events could disrupt the affective control the infants are attempting to maintain and reinstate the anxiety they are attempting to control. This defensive strategy might contain the anlagen of repression. There is some support for this hypothesis. Osofsky (in press) has found that infants of depressed mothers show less intense affective reactions to stressful situations and that by the first year of life they are becoming less emotionally responsive than infants of nondepressed mothers.

Maternal depression appears to have an effect on children at any developmental stage. Whether these effects are specific to the age at which the child is exposed is unclear. It is also unclear whether there are sensitive periods during the first several months of life during which infants are particularly sensitive to regulatory failures associated with maternal depression (Murray, 1992). Older children of depressed mothers show significant developmental effects, as well (Downey & Coyne, 1990). It is possible that the problems observed in older children result from earlier failures in regulation structuring the child and his

or her interactions with the mother and others in such a way that later developmental tasks are disrupted. Alternatively, maternal depression may have a compromising effect on development regardless of the child's age and that even in the absence of a history of earlier failure later exposure to maternal depression will result in developmental dysfunction. In future research, it will be critical to determine whether exposure at different ages has a differential impact on children's development.

Issues of chronicity and severity also must be considered. Teti (Teti et al., 1995) has suggested that severity and chronicity of depression may have more explanatory power than the parental diagnosis *per se*. Several studies demonstrate that greater severity and chronicity of maternal depression are related to greater compromise in maternal and infant functioning. Campbell (Campbell, Cohn, & Meyers, 1995) found that women whose depression lasted through 6 months postpartum were less positive with their infants during face-to-face play, feeding, and toy play than women whose depression remitted before 6 months. These women's infants also were less positive than the infants of mothers whose depression remitted. Similarly, Cohn and Campbell (1992) found that a brief depressive episode within the first 8 weeks postpartum was not related to infant insecure attachment. By contrast, longer depressive episodes lasting through the infant's first 6 months were associated with an increase of insecure attachment. Teti (Teti et al., 1995) further reports that infants and preschoolers without unitary, coherent attachment strategies tend to have mothers who are more chronically ill than children with coherent and organized attachment strategies. Finally, Frankel and Harmon (1996) found that women with double depression (i.e., both unipolar depression and dysthymia) were less emotionally available to their preschool children, showed more negative affect to the children, and had more insecurely attached children than women with major, minor, or intermittent depressions. These studies indicate that the severity/chronicity dimension is crucial to consider when evaluating the effects of maternal depression on infant and child functioning.

From the perspective of mutual regulation, diagnostic status, history, severity, and chronicity are important to the infant only to the extent that they

affect the mother's behavior with her infant. If depressed mothers' behavior and affect are not compromised, the infant would have to be a mind reader or a diagnostician to experience the mother's depression. From this perspective, it is expected that women who are able to interact positively with their infants despite meeting diagnostic criteria for depression currently or in the past will have infants who show less compromise than mothers who are not able to muster the energy to engage in positive interchanges. Thus, we would hypothesize that what the mother actually does with her infant may be more important than diagnostic status *per se*. Furthermore, as has been suggested by Campbell (Campbell et al., 1995), the ability of mothers to pull themselves together for their infants and derive pleasure from the mother-infant relationship may be a marker of who will or will not show a chronic and severe course of depression.

It is also critical to note that the child is not exposed only to the mother. Infants and young children interact with many others—fathers, siblings, relatives, adult and child friends. The extent to which interaction with these people ameliorates or exacerbates the effects of maternal depression must be considered. Often it is implied that the effects of others will enhance the child's development. This perspective is supported by research demonstrating the importance of other relationships for children who are described as invulnerable (Garnezy & Rutter, 1983). The mutual regulation model argues that what matters is what effect, whether direct or indirect, these others have on the child's experience. For example, fathers may have a direct enhancing effect on the child's development by interacting with the child in a well-regulated manner. Fathers also may have an indirect effect on the child's functioning by enhancing the mother's regulatory capacities with her child.

Unfortunately, the literature on maternal depression suggests that fathers, relatives, and friends all too often compromise the development of the children of depressed mothers. Merikangas (Merikangas, Weissman, Prusoff, & John, 1988) has demonstrated that the partners of depressed women are likely to suffer from psychiatric illness or a family history of mental disorders, a situation that has an additive negative effect on their children's functioning. Furthermore, in families with

one depressed individual, the relations among all family members frequently are characterized by negative affect, avoidance, and poor communication (Coyne, 1976). Expanding beyond the immediate family boundaries may not change the child's situation very much. It is well established that depressed women tend to have family histories of psychopathology. For example, Campbell (Campbell et al., 1992) found that 51% of depressed women reported affective disorders in at least one parent or sibling and that the rate of psychopathology increased to 72% when other conditions were included, such as alcohol and drug abuse, anxiety disorders, and "nervous breakdowns." Furthermore, Zahn-Waxler (1992) has reported that depressed mothers have assortive friendships and that their friends are more likely to be experiencing affective disorders. This means that their children and therefore the friends of the depressed mother's child's are experiencing dysregulation, as well. Thus, much of the research on the role of others suggests that the children of depressed mothers are likely to experience problematic interactions with fathers, siblings, relatives, maternal friends, and peers directly. Moreover, these people may have a dysregulating effect on the mother and so further exacerbate indirectly her regulatory problems with her child. These findings suggest that the effects of maternal depression may be a social network effect in which the child's regulatory experience with the mother and others is disrupted. Nonetheless, what the mother and others do with the child and each other is still the critical pathway for effects on the child. Only detailed observational research on the nature of the child's regulatory experiences with the mother, father, family friends, relatives, and peers will permit evaluation of this social network hypothesis.

Conclusion

The research on maternal depression and its effects on children indicates that dysfunctional affective, cognitive, and interactive problems associated with depression can be transmitted to a child at a very early age. There is a heterogeneous range

of outcomes in infants of depressed mothers. In comparison to the infants of nondepressed mothers, they evidence disturbances in their ability to regulate emotions, impairments in their capacity to engage objects and people, and a higher proportion of cognitive problems and insecure attachments to the mother. This diverse range of outcomes persists in older children, who evidence a variety of emotional, social, and cognitive problems and who, as they get older, begin to show psychiatric symptoms including depression (Downey & Coyne, 1990).

Many factors are associated with the effects of maternal depression on infant development. Impairment may stem from genetic, perinatal, temperamental, or environmental factors. However, while these multiple factors are critical to our understanding of the effects of maternal depression, we have argued that the process of mutual regulation is the final common pathway for the affective and regulatory problems observed in children of depressed mothers. It is our hypothesis that a chronic failure in the mutual regulation takes place between depressed mothers and their children, which results in the child reiteratively experiencing various forms of negative affect rather than the reparation of negative into positive affect. In response, the child develops coping strategies to control this negative affect, but the coping

strategies inadvertently compromise the child's development. We recognize that this hypothesis may be limited and, although there are only glimmerings of evidence, also have hypothesized that the child's regulatory experience may not be located simply with the mother but in the direct and indirect effects of the social network in which the child is embedded. Thus, the effects of maternal depression really may be the effects associated with a depressed social network that directly and indirectly disrupts the child's experience of mutual regulation.

Dysfunctional outcome is not a necessary outcome for the child of a depressed mother. The behavior of depressed individuals is heterogeneous, and protective factors may be operating. A child whose regulatory experience is characterized by successful regulation with the mother and/or others is likely to develop normally. The outcomes for children of depressed mothers, just as is the case for children of nondepressed mothers, is heterogeneous. From the perspective of mutual regulation, the pathways to normalcy and psychopathology are part of the same developmental process. While genetic, temperamental, physiological, and environmental factors play a role, the final common pathway is the slowly accumulated and eventually internalized regulatory experiences of the child.

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SECTION II / THEORETICAL AND CLINICAL PERSPECTIVES

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22 / Psychosocial Risks for Adolescent Parents and Infants: Clinical Implications

Joy D. Osofsky

Adolescent pregnancy, which results in approximately 480,000 births each year to women under the age of 19 years, has been accompanied in the past decade by an increasing sense of hopelessness and helplessness (Ladner & Gourdine, 1985; Wright-Edelman, 1989). Many of these young women and their families feel that they have little control over their lives and few options available to them. With adolescent pregnancy comes early parenthood, forcing many young women, who are still children themselves, into the position of having to take on the responsibilities of parenthood long before most are ready or able to assume this task. In addition to medical risks, there are many psychosocial risks for adolescent mothers and their infants, including mental health concerns for the mothers and developmental problems for the infants. This chapter reviews risk factors for infants and young children of teenage mothers and discusses both the clinical implications and possibilities for intervention.

Conceptual Framework for Understanding Adolescent Mothers and Their Families

The social context for adolescent mothers and their families is frequently defined by overwhelming and often negative environmental factors including poverty, family instability, and educational and economic disadvantage. While the family context may be more positive, frequently both the individual and family must cope with social adversity including poverty and its concomitant stresses. I have found it helpful to adapt some theoretical models to aid in providing a framework for understanding the adolescent mother and her family.

The life-span developmental approach provides a perspective on intergenerational issues and how